IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Luke J. Mawst, et al.

Title: TYPE II QUANTUM WELL MID-INFRARED OPTOELECTRONIC DEVICES

Appl. No.: 10/772,573

Filing Date: February 5, 2004

Art Unit: 2811

CERTIFICATE OF MAILING
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents,P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.

Harry C. Engstrom
(Printed Name)

(Signature)

July 30, 2004
(Date of Deposit)

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO-1449 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document, except as noted below, is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The USPTO has waived the requirement under 37 CFR 1.98(a)(2)(i) to submit copies of U.S. patents and U.S. patent application publications when citing and submitting an Information Disclosure Statements in a patent application filed after June 30, 2003 and in an international application that has entered the national stage under 37 USC §371 after June 30, 2003. Accordingly, copies of these types of documents are not being supplied in connection with this application. Reference is being made to Pre-OG Notice from Office of Patent Legal

Administration dated July 25, 2003, *Information Disclosure Statements May Be Filed Without Copies of U.S. Patents and Published Applications in Patent Applications filed after June 30, 2003.*

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

RELEVANCE OF EACH DOCUMENT

All of the documents are in English and relate to semiconductor lasers. Most of these documents are also discussed in the present application.

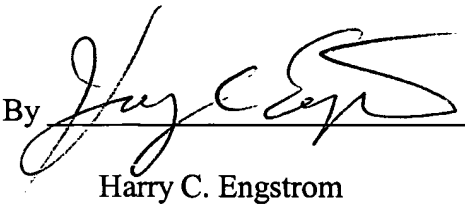
Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO-1449 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check

being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2350.

Respectfully submitted,

Dated: July 30, 2004

By 

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Form PTO-1449 (MODIFIED)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 032026-0754	SERIAL NO. 10/772,573
INFORMATION DISCLOSURE CITATION		APPLICANT Luke J. Mawst, et al.	
(Use several sheets if necessary)		FILING DATE 02/05/2004	GROUP ART UNIT 2811

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
		5,793,787	8/11/98	Meyer, et al.			
		2004-0061102	4/1/04	Tansu			
		5,383,211	1/95	Van de Walle, et al.			
		6,621,842	9/03	Dapkus			

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION YES	TRANSLATION NO
		WO 01/29943	4/26/01	PCT				

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

		H. C. Casey, Jr., "Temperature dependence of threshold current density on InP-$Ga_{0.28}In_{0.72}As_{0.6}P_{0.4}$ (1.3 μm) double heterostructure lasers," J. Appl. Phys., Vol. 56 (7), 1984, pp. 1959-1964.
		J. R. Meyer, C. A. Hoffman, F. J. Bartoli, and L. R. Ram-Mohan, "Type II-quantum well lasers for the mid-wavelength infrared," Appl. Phys. Lett., 67 (6), 1995, pp. 757-759.
		M. Kondow, T. Kitatani, S. Nakatsuka, M. C. Larson, K. Nakahara, Y. Yazawa, M. Okai, and K. Uomi, "GaInNAs : A novel material for long wavelength semiconductor lasers," IEEE J. Select. Topic Quantum Electronic., Vol. 3, 1997, pp. 719-730.
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		J.S. Harris, Jr., "Tunable Long-Wavelength Vertical-Cavity Lasers: The Engine of Next Generation Optical Networks?" IEEE J. Select. Topics Quantum Electron., Vol. 6, No. 6, Nov./Dec. 2000, pp. 1145-1160.
		M. O. Fischer, M. Reinhardt, A. Forchel, "Room-temperature operation of GaInAsN-GaAs laser diodes in the 1.5-μm range," IEEE J. Select. Topic Quantum Electronic., Vol. 7 (2), March-April 2001, pp. 149-151;
		M. Kawaguchi, T. Miyamoto, E. Gouardes, D. Schlenker, T. Kondo, F. Koyama, and K. Iga, " Lasing characteristics of low threshold GaInNAs lasers grown by Metalorganic Chemical vapor Deposition", Jpn. J. Appl. Phys., Vol. 40, July 2001, pp. L744-L746.
		N. Tansu and L. J. Mawst, "Low-Threshold Strain-Compensated InGaAs(N) (λ=1.19-1.31 μm) Quantum Well Lasers," IEEE Photon. Technol. Lett., Vol. 14(4), April 2002, pp. 444-446.
		J.I. Malin, et al., "Type II Mid-Infrared Quantum Well Lasers," App. Phys. Lett., Vol. 68, No. 21, 20 May 1996, pp. 2976-2978.
		J.R. Meyer, et al., "Auger Coefficients in Type-II InAs/$Ga_{1-x}In_xSb$ Quantum Wells," Applied Physics Letters, Vol. 73, No. 20, 16 November 1998, pp. 2857-2859.
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		Nelson Tansu, et al., "High-Performance Strain-Compensated InGaAs-GaAsP-GaAs (λ=1.17 μm) Quantum-Well Diode Lasers," IEEE Photonics Technology Letters, Vol. 13, No. 3, March, 2001, pp. 179-181.
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		Nelson Tansu and Luke Mawst, "Design Analysis of 1550-nm GaAsSb-(In)GaAsN Type-II Quantum-Well Laser Active Regions," IEEE J. of Quantum Elec., Vol. 39, No. 10, Oct. 2003, pp. 1205-1210.

EXAMINER	DATE CONSIDERED

* **EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.**